PAYLOAD HAZARD REPORT

		a. NO: GHR AMS02--005
b. PAYLOAD: Alphamagnetic Spectrometer-02 (AMS-02) GSE		c. PHASE: II
d. SUBSYSTEM: Pressure Systems	e. HAZARD GROUP: Injury/Illness	f. DATE: May 2008
g. HAZARD TITLE: Exposure to High-Pressure Gas plume effects.		i. HAZARD CATEGORY ☒ CATASTROPHIC ☐ CRITICAL

h. APPLICABLE SAFETY REQUIREMENTS:

KHB 1700.7C, Section: 4.4.2.1.b. Oxygen Deficient Atmospheres and 4.4.4 Toxic Materials

j. DESCRIPTION OF HAZARD

Exposure of personnel to vented gases (gas plume) leads to an asphyxiation, high velocity gas, projectile, and/or touch temperature hazard.

k. HAZARD CAUSES:

1 Exposure to high-pressure gas and/or cold He gas at vents or pressure relief devices on the AMS-02 payload, GSE He supply dewars or TRD GSE pressure systems due to equipment failure or operator error.

2 Exposure to high pressure gas at AMS-02 payload or CGSE supply dewar vents during normal fill/transfer operations.

3. Improper handling, assembly or operations of gas systems.

(Note: some operations will occur with partially filled cryogenic containers and some connectors may be changed during operations)

l. HAZARD CONTROLS:

(See continuation sheet)

m. SAFETY VERIFICATION METHODS:

(See continuation sheet)

n. STATUS OF VERIFICATION:

(See continuation sheet)

o. APPROVAL	PAYLOAD ORGANIZATION	SSP/ISS
PHASE I		
PHASE II	TRENT MARTIN 10/6/08	10/3/08
PHASE III		

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k. HAZARD CAUSES:

1. Exposure to high-pressure and/or cold gas at vents or pressure relief devices on the AMS-02 payload or GSE pressure systems due to equipment failure or operator error.

l. HAZARD CONTROLS:

1.1 Vents and relief devices will be directed out of the work area by proper GSE set-up design or by use of vent shields and deflectors.

1.2 Labels clearly identifying vents and relief devices will be provided to warn personnel of potential gas plume locations.

1.3 Low risk vents will be identified and those vents will not require shields, deflectors or diffusers due to the low probability of venting or the low vent rate.

1.4 AMS-02 operations do not require personnel in the vicinity of high volume vents during manual operations.

1.5 Use of PPE during direct operations on Cryogenic systems.

m. SAFETY VERIFICATION METHODS:

1.1.1 Review of ground layout to show that vent lines are appropriately sized and secured to direct venting outside the work area and to prevent lines whipping.

1.2.1 QA inspection of warning labels to verify they are located at each vent and pressure relief device.

1.3.1 PO Review and provide to GSRP the AMS-02 venting analysis and labeling plan.

1.4.1 Review of manual operations to ensure personnel not in high volume vent areas.

1.5.1 Review AMS-02 procedures to ensure use of PPE.

n. STATUS OF VERIFICATION:

1.1.1	Open
1.2.1	Open
1.3.1	Open
1.4.1	Open
1.5.1	Open

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k. HAZARD CAUSES:

2. Exposure to high pressure gas at AMS-02 payload or CGSE supply dewar vents during normal fill/transfer operations, assembly.

l. HAZARD CONTROLS:

2.1 Personnel will use appropriate protective clothing (e.g., face shield, gloves, apron, etc.) during fill/transfer operations.

2.2 Access to payload and GSE supply dewars will be limited during fill/transfer operations.

2.3 Labels clearly identifying vents and cold surfaces will be provided to warn personnel to stay clear.

2.4 Personnel training in fill/transfer operations will be provided.

2.5 CGSE will include clear and obvious indications when filling operations are taking place.

m. SAFETY VERIFICATION METHODS:

2.1.1 Review of procedures to ensure appropriate PPE is included.

2.2.1 Review of procedures to ensure listing of limited access areas. Procedures stating obvious markings (cones, ropes, warning tape etc) to identify filling operations.

2.3.1 QA inspection of warning labels to verify they are located at each vent and on all cold surfaces.

2.4.1 Certification of personnel cryogen handling training.(AMS-02 retains a master list of personnel and certifications)

2.5.1 Review of CGSE operational hardware/procedures to indicate when active filling operations are occuring

n. STATUS OF VERIFICATION:

2.1.1	Open
2.2.1	Open
2.3.1	Open
2.4.1	Open
2.5.1	Open

PAYLOAD HAZARD REPORT CONTINUATION SHEET	a.. NO: GHR AMS02--005
b. PAYLOAD: Alphamagnetic Spectrometer-02 (AMS-02) GSE	c. PHASE II

k. HAZARD CAUSES:

3. Improper handling, assembly, or operations of gas systems.
(Note: some operations will occur with partially filled cryogenic containers and some connectors may be changed during operations).

l. HAZARD CONTROLS:

3.1 Assembly procedures to ensure proper installation (PPE will be called out when necessary).

3.2 Operating procedures listing mandatory inspection points (MIP's) and listing the required PPE needed during the operations.

3.3 Visual inspection of hardware for leaks during testing.

3.4 Only trained personnel will be in the area during gas systems operations.

m. SAFETY VERIFICATION METHODS:

3.1.1 Review and approval of AMS-02 procedures.

3.2.1 Review and approval of AMS-02 procedures.

3.3.1 QA review and approval of successful AMS-02 and CGSE functional test.

3.4.1 Review of AMS procedures to ensure only trained personnel are allowed in the area during operations.

n. STATUS OF VERIFICATION:

3.1.1	Open
3.2.1	Open
3.3.1	Open
3.4.1	Open